

TITLE: A method for obtaining first interaction length distribution and its interpretation for extensive air showers seen by Pierre Auger Observatory

ABSTRACT:

The Pierre Auger Observatory is the world's largest cosmic ray observatory. It provides unique opportunities for understanding physics on the different scales. Large scale anisotropies and the energy spectrum are among the important results published by the observatory. Recently, the distribution of depth of shower maximum of extensive air showers was analyzed for p-Air cross-section at $10^{18.25}$ eV. The limitations such as duty cycle hinders retrieving more information from the fluorescent telescopes. Other component of the observatory, surface detector, has almost 100% duty cycle. Thus, we attempted to develop a surface detector based method for finding the cross-section.

In the first part of the talk, I will introduce the experiment and its main components. Then, in the second part, I will briefly describe the recent results published about p-Air cross-section. I will also discuss the method which we developed. Lastly, I will review the electronics being developed for communication systems of the Pierre Auger Observatory Research and Development Array.

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